What is claimed is:

1. A method of constructing a support structure for a catheter comprising:

providing a first strand comprised of a fiber coated with a PPC resin; and

winding a number of strands including the first strand to form the support structure.

2. The method of claim 1, wherein said step of winding a number of strands includes forming a braid.

3. The method of claim 1, wherein said step of winding a number of strands includes forming a weave.

4. The method of claim 1, wherein said step of winding a number of strands includes forming a helical coil.

5. The method of claim 4, wherein the number of strands includes only the first strand.

6. The method of claim 1, further comprising only partially curing the PPC resin.

7. The method of claim 1, wherein the support structure has an axial length, the method further comprising:

curing the PPC resin to a first extent at a first location along the axial length of the support structure; and

curing the PPC resin to a second extend different from the first extent at a second location along the axial length of the support structure.

8. The method of claim 1, further comprising:

shaping the support structure to a predetermined shape; and

curing a portion of the PPC resin to cause the support structure to retain the predetermined shape.

9. The method of claim 8, wherein said shaping step is performed after the support structure has been incorporated into a catheter.

10. A method of providing a catheter with variable flexibility comprising:

providing the catheter with a reinforcing layer having at least one fiber coated with a PPC resin;

causing the PPC resin disposed on the fiber to polymerize to a first extent at a first location; and

causing the PPC resin disposed on the fiber to polymerize to a second extent at a second location;

wherein the first extent is different from the second extent.

11. The method of claim 10, wherein the first extent is greater than the second

extent, and wherein the stiffness of the catheter is greater at the first location than the stiffness of the catheter at the second location.

12. The method of claim 10, wherein the step of causing the resin to at least partially polymerize includes exposing the wall of said catheter to radiation.

13. A support member for a catheter shaft section comprising:

a proximal end and a distal end;

a number of strands forming part of a tubular structure; and

an amount of a PPC resin coated on the strands near at least one of said proximal end or said distal end.

14. The support member of claim 13, wherein said PPC resin is at least partially polymerized.

15. The support member of claim 13, wherein said PPC resin encapsulates at least one of said proximal end or said distal end.

16. A stent for placement in a body lumen, the stent comprising:

a structure having a first end, and a second end; and

a PPC resin coated on at least one of said first end or said second end; wherein said PPC resin strengthens at least one of said first end or said second end upon expansion and curing.

17. The stent of claim 16, wherein said PPC resin is disposed about the encapsulated end by coating a fiber with PPC resin and wrapping the fiber around the encapsulated end.

18. The stent of claim 16, wherein said PPC resin is disposed about the encapsulated end by depositing said PPC resin on portions of the structure at the encapsulated end.

19. A catheter section comprising:

an inner polymeric layer;

an outer polymeric layer; and

a support structure between said inner layer and said outer layer, said support structure including at least one strand comprised of a fiber coated with a PPC resin.

20. The catheter section of claim 19, wherein said support structure is in the form of at least one helical coil.

21. The catheter section of claim 19, wherein said support structure is in the form of a braid.

22. A catheter comprising:

a first section having a first flexibility; and

a second section having a second flexibility that is greater than the first flexibility;

wherein both the first section and the second section include an inner layer, an outer layer, and a reinforcing layer including a fiber coated with a PPC resin therebetween;

wherein the first section includes a greater amount of polymerized PPC resin than the second section.

23. A method of forming a catheter comprising:

providing an inner layer;

providing an outer layer; and

providing a support member between said inner layer and said outer layer, said support member including at least one strand comprising a fiber coated with a PPC resin.

24. The method of claim 23, further comprising exposing a portion of said strand to light to cause at least partial polymerization of said PPC resin.

25. The method of claim 23, wherein said step of exposing said strand includes passing light through at least one of said inner layer or said outer layer.

26. A method of implanting a stent comprising:

providing a stent having at least one strand comprising a fiber coated with a PPC resin;

placing the stent over an expandable actuator including an electroactive polymer,

the expandable actuator being disposed on an elongate medical device;

positioning the stent and the expandable actuator in a desired location in a body lumen;

actuating the expandable actuator by providing electrical energy; and

at least partially polymerizing the PPC resin by application of radiation to the stent.

27. The method of claim 26, wherein the fiber comprises a polyethylene fiber, and wherein the PPC resin includes a ceramic filler material.

28. The method of claim 27, wherein the step of providing a stent includes:

providing at least one polyethylene fiber;

cold plasma treating the polyethylene fiber to improve the adhesive characteristics of the polyethylene fiber; and

coating the polyethylene fiber with the PPC resin.

29. A method of implanting a self-expanding stent comprising:

providing a stent having at least a section coated with a PPC resin, the stent being elastically biased to a first diameter;

compressing the stent to a second diameter that is less than the first diameter against the elastic bias;

restraining the stent at a location near the distal end of a catheter shaft;

inserting the stent into the body of a patient by advancing the distal end of the

catheter shaft into a body lumen of the patient;

releasing the stent at a desired location in the body lumen such that the stent expands using elastic restoring forces; and, after releasing the stent,

at least partially polymerizing the PPC resin to stiffen the at least one fiber.

30. The method of claim 29, wherein the step of providing a stent uses at least one cold plasma treated polyethylene fiber coated with a polymerizable ceramic impregnated resin.

31. The method of claim 29, wherein the step of releasing the stent also includes inflating a balloon over which the stent was restrained to provide additional expansive force to the stent.

32. The method of claim 31, wherein the balloon is kept in an inflated state while the step of at least partially polymerizing the PPC resin is performed.

33. The method of claim 29, wherein the step of at least partially polymerizing the PPC resin is performed by irradiating portions of the stent with a desired wavelength.